

## Generic Concepts in the Perilampidae (Hymenoptera: Chalcidoidea): An Assessment of Recently Proposed Genera

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*Abstract.*—The 26 new genera of Perilampidae proposed by Argaman (1990, 1991) are evaluated to determine if these concepts improve our understanding of the systematics of the family. It is demonstrated that: 1) many of the proposed genera are polyphyletic assemblages; 2) some of the type species of the genera are based on misidentified specimens and are problematic with respect to the International Code of Zoological Nomenclature; 3) except for eleven monotypic genera, the putatively monophyletic genera are formalizations of species groups recognized by earlier authors; and 4) the generic concepts do not contribute to a comprehensive system for classifying the species of *Perilampus* Latreille—a large number of disparate and unrelated species remain exiled in *Perilampus* Latreille (sensu Argaman). Argaman's generic classification has not been adopted nor should it. Twenty-six new synonyms of *Perilampus* Latreille, 1809 are proposed, 1 subjective synonym based on the synonymy of the type species with the type species of *Perilampus*, *Olarlar* Argaman, 1990, and the following 25 subjective synonyms: *Bagdasar* Argaman, 1990; *Balintos* Argaman, 1990; *Bukbakas* Argaman, 1990; *Dekterek* Argaman, 1990; *Durgadas* Argaman, 1990; *Ecalibur* Argaman, 1990; *Fifirtiz* Argaman, 1990; *Fulaytar* Argaman, 1990; *Goyurfs* Argaman, 1990; *Ihanbrek* Argaman, 1990; *Itonayis* Argaman, 1990; *Kekender* Argaman, 1990; *Lufarfar* Argaman, 1991; *Mivarhis* Argaman, 1990; *Naspoyar* Argaman, 1990; *Nilgator* Argaman, 1990; *Pondoros* Argaman, 1991; *Sicatang* Argaman, 1990; *Taltonos* Argaman, 1990; *Tiboras* Argaman, 1990; *Tondolos* Argaman, 1990; *Vadramas* Argaman, 1990; *Vaktaris* Argaman, 1990; *Yertatop* Argaman, 1990; *Zuglavus* Argaman, 1990. The synonymy of *Afroperilampus* Risbec, 1956 with *Perilampus* Latreille, 1809 is reestablished (revised status) and lectotypes are also designated for 6 species: *Chalcis aenea* Rossi, 1790; *Perilampus chrysonotus* Förster, 1859; *Perilampus igniceps* Cameron, 1909; *Perilampus minutus* Girault, 1912; *Perilampus nigriviridis* Girault, 1912; and *Perilampus tristis* Mayr, 1905. In addition to restoring the nomenclature, many character systems of importance for an improved understanding of the systematics of the Perilampidae are discussed and illustrated, and a proposal is made to continue to recognize informal species groups within the genus *Perilampus*.

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### INTRODUCTION

The potential work load of systematists has increased markedly in recent years. Not only are there fewer specialists but their distribution across taxa is ill-matched to species richness and the magnitude of the work remaining (Gaston and May 1992). The "biodiversity crisis", with the need to provide accurate and relevant information for conservation and development initiatives, is placing additional demands on systematists. Nowhere are the

problems greater than in entomology. Not only is inventory and descriptive work at a very early stage in entomology but the importance of terrestrial arthropods as indicators of ecosystem health is now more generally appreciated (Wilson 1987). There is now a pressing need for both inventory and monitoring programs of terrestrial arthropods (Kremen *et al.* 1993). However, it must be remembered that systematists are responsible for naming and organizing organic diversity. If classifica-

tions are to have the predictive value of a phylogenetic system (Wheeler 1990)—one that reflects evolutionary history—then constant vigilance must be kept on the taxonomy of all groups of organisms.

Scrutiny is particularly important at the generic level. Because of the requirements for binominal nomenclature, names are the point of entry for information assembled in both the literature and collections. For many groups of insects, generic names summarize important biological information, but only if the classifications are based on sound phylogenetic principles. Failures in this regard, and the taxonomic chaos generated, have elicited concerns about the utility and efficiency of a binominal nomenclature (Mayr 1969), and have also precipitated suggestions to restrict publication of available names to accredited sources or to establish a system of "protected" works (Cornelius 1987).

This paper addresses a generic reclassification of the Perilampidae by Argaman (1990, 1991) that threatens the stability of the nomenclature and the predictability of the classification of the Perilampidae. Unfortunately, the publications under consideration (Argaman 1990, 1991) meet the criteria for availability as set out by the International Commission of Zoological Nomenclature (ICZN). These publications were, however, ignored during the preparation of chapters for the *Hymenoptera of Costa Rica* (1995a) and the *Genera of Nearctic Chalcidoidea* (Darling, in press) but until an assessment of the generic concepts of Argaman (1990, 1991) is published, both the classification and nomenclature of the Perilampidae are compromised (Gibson 1993). Specifically, it will be demonstrated that the taxonomic changes at the generic level proposed by Argaman, which splits the genus *Perilampus* Latreille into 27 genera, are at best retrogressive. The 26 new species described by Argaman will not be dealt with specifically, nor will his idiosyncratic approach to classification and phylogenetics be discussed.

There are two basic requirements for a revised generic classification to advance our understanding. Firstly, all new genera must be arguably monophyletic; character polarity must be determined. This requires that generic studies be as comprehensive as possible at either the subfamily or family level. Secondly, the proposed genera should form a comprehensive system, ideally with all species referred to monophyletic genera. Guidelines such as the "inverse ratio" recommendation (Mayr 1969:92)—that the size of the gap between genera (degree of difference) be in inverse ratio to the number of species in the genus—are useful in preventing the proliferation of monotypic genera but only after the basic conceptual requirement of monophyly is met. It is from this perspective that the genera proposed by Argaman will be discussed and that subjective synonymies are proposed herein.

#### SYNOPSIS OF ARGAMAN (1990, 1991)

Argaman's work on the Perilampidae was published in two parts, I (1990) and II (1991), and consists mainly of an illustrated key of 234 couplets to 28 genera and species of *Perilampus* s.l. (1990). Also included is a section describing new taxa (1990; except 1991 for *Pondoros* and *Lufarfara*) and an annotated checklist of species which includes the material examined (1991). The generic treatments consist only of the designation of a type species and a description that is purportedly comparative with *Perilampus* s.s. No differential diagnoses are provided and most of this evaluation of Argaman's generic concepts is based on the morphological information provided in the key.

Argaman's study was based in large part on a collection of perilampids in the Hungarian Natural History Museum, Budapest, which was "gathered together tediously by the late Dr. Lajos Biró" (Argaman 1990:192). Much of the material was collected by Biró, but many of the specimens "were received from other muse-

ums", perhaps through loans or exchange. Much of this material now resides in Argaman's personal collection. Argaman also apparently based many of his conclusions on Biró's notes and/or unpublished manuscripts (Z. Bouček, *in litt.*). This has contributed to the major shortcoming of the paper—most conclusions are not based on type material or even, as is now apparent, accurately identified specimens. In many cases this is only conjecture because Argaman has only made a few specimens from his personal collection available for study. Argaman acknowledged the above shortcoming (1990:190): "In some instances, no type material was available, and the respective species were treated in the key on the basis of identified material, which may be or may be not consistent with the type of that species." This is critical in cases where type species of new genera are designated. As will be discussed, in several cases the specimens referred by Argaman to the type species were misidentified. In accordance with Article 70 of the ICZN, each of these cases should be referred to the Commission to designate the type species. The Commission could summarily deal with these generic names by designating *Cynips italica* Fabricius as the type species of the Argaman genera. This species is the type species of *Perilampus* Latreille, 1809 (*q.v.*) and the Argaman genera would then become objective synonyms of *Perilampus* (Art. 61(c)(iii)). This would restore accustomed usage and preclude the names, and the uncertainty associated with them, from resurfacing in the future.

Another problem with the approach taken by Argaman was his failure to adequately consider other described genera of Perilampidae. These are currently classified in two subfamilies, Chrysolampinae and Perilampinae (see Bouček, 1988). Perilampinae includes, in addition to *Perilampus*, *Euperilampus* Walker, *Krombeinius* Bouček, *Monacon* Waterston, *Steffanolampus* Peck, and *Burksilampus* Bouček. Each

of these genera is separated from *Perilampus* by a distinct morphological gap and are putatively monophyletic, but they almost certainly render *Perilampus* as a paraphyletic assemblage. As will be demonstrated, the taxonomic changes proposed by Argaman only exacerbate the paraphyly of the Perilampinae.

## METHODS

The genera proposed in Argaman (1990, 1991) are evaluated individually with respect to the criteria for genera discussed above. Of particular importance is the question of monophyly. Argaman stated that *Euperilampus* is the sister-genus of *Perilampus* (*s.l.*), but provided no justification for this claim. Darling (1983) presented morphological data that, when analyzed from a cladistic perspective, suggests that the recognition of *Euperilampus* (and *Krombeinius* and probably *Burksilampus*) renders *Perilampus* paraphyletic; *Euperilampus* is therefore an inappropriate outgroup. I will base my outgroup comparisons on *Steffanolampus*, which is regarded as the most plesiomorphic genus of Perilampinae (Darling 1988), and *Chrysolampus* Spinola (Chrysolampinae).

Evaluating generic concepts is predicated on the study of the type species but this is problematic if the specimens used to designate the type species were misidentified at the time of typification. The ICZN instructs that correct identification be assumed unless there is compelling evidence to the contrary. In the absence of conclusive evidence to the contrary, this assumption was made for each of Argaman's genera. So typified, it will be shown that these genera do not advance our understanding of the systematics of Perilampidae. In some cases it has been possible to demonstrate that the type species was based on a misidentified specimen. The use of these names would lead to nomenclatural instability and would require that a separate case be submitted to the Commission for each genus (ICZN, Art. 70).

The synonymies proposed and the use of informal species groups *Perilampus* would obviate formal petitions to the Commission.

The genera proposed by Argaman are discussed in the context of the informal species groups of *Perilampus* (s.l.) that have been recognized by previous authors. To facilitate locating the treatments of a particular genus, an alphabetical index has been provided in Appendix 1. The material examined sections list only those specimens studied during this reanalysis and includes both specimens examined by Argaman and determined or type material that was not available to him. In the generic accounts, the only included species listed are those mentioned in the text or species which have been previously referred to species groups. Figures referred to as fig. x are found in Argaman 1990 unless credited otherwise; those cited as Fig. x are contained herein. Museum acronyms are as follows: ANIC, Australian National Insect Collection, Canberra; BMNH, British Museum (Natural History), London; CNC, Canadian National Collection of Insects, Arachnids, and Nematodes, Ottawa; HNHM, Hungarian Natural History Museum, Budapest; MCSN, Museo Civico di Storia Naturale "G. Doria", Genoa; MNHN, Museum National D'Histoire Naturelle, Paris; NMV, Naturhistorisches Museum Wien, Vienna; ROM, Royal Ontario Museum, Toronto; UA, University of Arkansas, Lafayette; USNM, National Museum of Natural History, Washington, D.C.

#### MORPHOLOGICAL FEATURES USED BY ARGAMAN (1990, 1991)

Many of the genera proposed by Argaman are a result of elevating provisional species groups proposed by other workers (e.g., Smulyan 1936; Bouček 1956; Darling 1983). However, many of the defining features of these species groups are subject to convergence and reversals and species groups are both an effective and conser-

vative approach under these circumstances. Argaman further complicates the issue by "redefining" some of the diagnostic features of these species groups. Consider, for example, "head carinated". Argaman (1990:200) expanded this from the traditional definition of a sharp carina from the anterior ocellus to the antennal torulus (his "carina very often sharp with outer side sulcate", fig. 14, 21, 26) to include simply "a sharp edge of the depression", fig. 5) and even a "concealed" carina (fig. 67, 70)! Notwithstanding this complicated and confused morphology, Argaman used this "character" as a major subdivision in the genus *Perilampus* and, as is discussed below, closely related species were referred to different genera because he considered the species to have different states of the frontal carina. Other workers have realized that the frontal carina is difficult to characterize unequivocally, particularly if the vertex and inner orbits have longitudinal costae (Fig. 3) or if the frons meets the vertex at a sharp keel (Fig. 5), but have restricted the term to include only a sharply raised carina that is extended from behind the anterior ocellus ventrad on each side of the scrobal cavity to the level of the antennal toruli (Fig. 1, 2). This definition of the frontal carina is equivalent to the carina with the "outer side sulcate" sensu Argaman (Figs. 1, 2). Fortunately there is another morphological feature, finger-like axillula (Fig. 8 cf. Fig. 7), which is unequivocal in its manifestation, and is also found in all of the truly carinate New World species. This latter feature allows the assessment of variability in the development of the frontal carina in a demonstrably monophyletic group, the clade containing the *Perilampus hyalinus* + *Perilampus platigaster* species groups. Unless carefully defined, a frontal carina can even be variable within a species (see discussion of *Kekender*).

Other morphological features used by Argaman to support his generic reclassification include: the size and shape of the

prepectus relative to the lateral pronotal panel; the presence of tubercles or scales on the mesoscutum and scutellum; and sculptural features such as fine punctures on the second metasomal tergite (T2), cross-arcuate costae or rugae on the mesoscutum, oblique costae on the malar region of the head, and the presence or absence of various carinae on the propodeum. Even a cursory look at other monophyletic groups within the Perilampinae, for example the species currently referred to *Euperilampus* and *Krombeinius* (Darling 1983, 1988, 1995), documents homoplasy in many of these character states, which argues against monothetic generic concepts based on these states. In some cases, species that I regard as closely related are referred to different genera by Argaman simply because they differ in a single very labile feature. For example, Argaman placed great importance on the sculpture of the vertex and the relative length of the malar sulcus. He separated two pairs of genera on the basis of a long *versus* short malar sulcus (relative to front margin of malar cavity), one pair of genera having the vertex smooth, devoid of sculpture (*Vadramas* and *Sicatang*), and the other pair with the vertex sculptured (*Perilampus* s.s. and *Mivarhis*). If the sculpture of the vertex is subject to homoplasy (see below) then the number of genera is reduced by two. Moreover, if the length of the malar sulcus is evolutionarily labile (see below) then all four generic names would be regarded as synonyms.

Argaman did introduce some new morphological character systems for consideration, but the phylogenetic significance of many of these are compromised by his errors in basic morphology and phylogenetic interpretation. Perhaps the most interesting novel character state is the bicarinulate posterior margin of the pronotum (Fig. 18 cf. Fig. 17). But Argaman used both the absence and the presence of a bicarinulate pronotum as the sole justification for the establishment of genera. The

New World genus *Goyurfsis* is distinguished from *Taltonos* by the absence of this character state whereas the presence of a bicarinulate pronotum distinguishes the Old World genus *Tiboras* from *Fulaytar*. It is clear, however, from outgroup comparison with both *Steffanolampus* and *Chrysolampus* that the presence of a bicarinulate pronotum is apomorphic in the Perilampinae. The bicarinulate pronotum is also subject to homoplasy even within clearly defined clades. For example, the bicarinulate pronotum is present in most species of *Krombeinius* (Darling 1995b) but only in some species of *Euperilampus* (e.g., present in *E. tanyglossa* Darling, Darling 1983, fig. 33, apparently reduced in most species of the *E. triangularis* group, Darling, 1983, figs. 13–15, and absent from *E. scutellatus* (Girault) and *E. mediterraneus* Bouček). A further complication is that some of the species Argaman characterized as having a bicarinulate pronotum do not, based on an examination of type material (see discussion of *Tiboras*).

#### THE GENERA RECOGNIZED BY ARGAMAN (1990, 1991)

The structure of the head, in particular the degree of development of frontal carina or ridges, has figured prominently in virtually all previous attempts to both identify and organize the species of *Perilampus* (s.l.). The first couplet of Argaman's key is also based on the structure of the head and purports to separate species with a frontal carina, the "carinate" species from the "acarinate species", those lacking a frontal carina. This assessment of the 28 genera recognized by Argaman is organized in two sections, the carinate and the acarinate genera (*sensu* Argaman, based on couplet 1). Within each of these two groups the "genera" are arranged by other morphological features, by previously recognized species groups, or by the types of problems encountered (e.g., monotypic genera, polyphyletic assemblages).

### A. The Carinate Genera of Argaman

Eleven genera were proposed for putatively carinate species, seven of which are monotypic. Three of the monotypic genera do not have a frontal carina on the head and are almost certainly more closely related to acarinate species of *Perilampus* (s.l.). Two other monotypic genera were based on autapomorphic features but are clearly related to other carinate genera. Four of the remaining genera were based either on misinterpretations of morphology or on character states that are variable in other genera of Perilampinae. Of the two remaining genera, one was based on a plesiomorphy and the other might be a highly variable single species, *P. hyalinus* Say.

#### (1) Genera Lacking a True Frontal Carina

Three monotypic genera were erected by Argaman for species that actually lack a frontal carina. One is a highly apomorphic species of uncertain affinities which is known only from the male, and both of the two genera are based on species that are closely related to species that lack a frontal carina on the head.

**Kekender** Argaman, 1990:233. Type species: *Kekender bouceki* Argaman, 1990, by original designation. Monotypic.

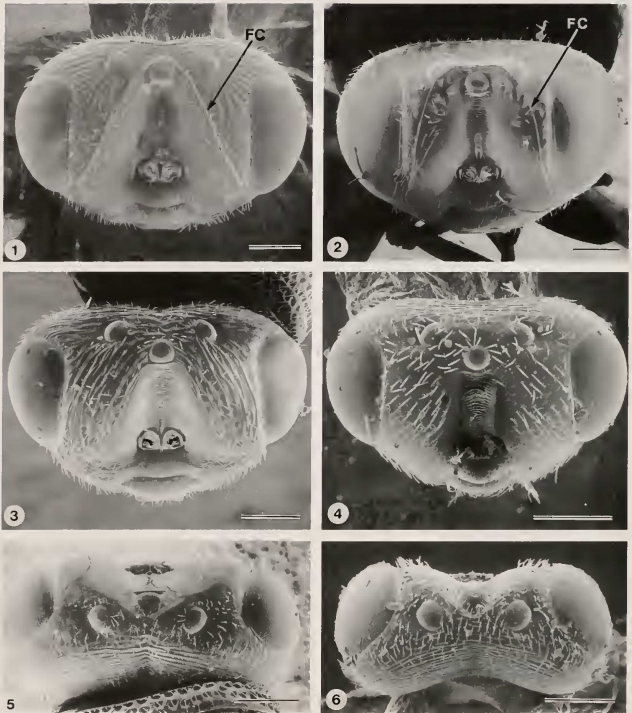
*Material Examined*.—Holotype ♂, "[Kenya] Muto-Berg, Kenia"; Argaman collection. Also examined: ♂, "[Zimbabwe] Bulawayo S. Rhodesia 9.11.1924 Rhodesia Museum"; ♂, "N. Nigeria: Zaria 12.x.1971 J.C. Deeming"; ♀, "[Namibia?] Kranzberg III-1932 G. v. Son", "Transvaal Museum"; all temporarily BMNH.

Argaman based this genus on a single male from Kenya. Three additional males were examined by me, through the kindness of Dr. Zdenek Bouček, who has known of the existence of these remarkable wasps for many years and planned to describe the species in the context of a revision of the African species of *Perilampus* (pers. comm.). I regard all four specimens

as conspecific. As Argaman noted, in the holotype the first funicular segment is twice as long as wide and almost as long as the following two segments combined. This distinctive configuration of the antenna is also found in the other three males. Argaman treated *Kekender* as a carinate species based on an abruptly margined scrobal depression (fig. 5). A distinct frontal carina is not present in the holotype of *K. bouceki* but there is variability in the structure of the head in this species. The specimen from Kranzberg has a short carina which, however, is restricted to the region of the ocellar triangle.

The most remarkable feature of *K. bouceki* is the configuration of the scutellum. In lateral view the scutellum is doubly convex, with two very distinct promontories along the midline (fig. 4). However, there is considerable variability in the degree of development of the doubly convex scutellum. All three specimens examined are virtually the same size, approx. 4 mm; the variable development of the scutellum is not the result of simple allometry. The specimen from Nigeria has the scutellum almost normal in configuration and the specimen from Namibia has the most extreme development of the scutellum; Argaman's holotype (fig. 4) and the specimen from Zimbabwe are intermediate. Otherwise, the four specimens are virtually identical. Until the female is discovered it will not be possible to determine if the development of the scutellum is sexually dimorphic; if so, then sexual selection might be responsible for the peculiar and variable nature of the scutellum.

Argaman did note some other peculiarities of *K. bouceki*: the malar space is long and lacks a distinct sulcus; the legs are rather long and narrow; and the structure of the propodeum is rather distinctive, i.e., the discal areas are sculptured as opposed to glabrous. However, I am at a loss to explain the first feature mentioned in his key couplet 3 (a ventrally directed tubercle on the propleuron, mesosternum and pro-



Figs. 1-6. Heads of *Perilampus* species, 1-4 oblique frontal view, 5 and 6 dorsal view. 1. *P. hyalinus*. 2. *P. platigaster*. 3. *P. emersoni*. 4. *P. anomocerus*. 5. *P. tristis*. 6. *P. fulvicornis*. FC, frontal carina. Scale lines, 0.25 mm.

podeum), and his description and illustration of the prepectus (fig. 4) do not agree with the specimens I have examined (Fig. 23). Argaman was so impressed by the apomorphies that he stated that there were "no close relatives of this species within Perilampidae" and that "I regard

this genus as the most transient perilampid toward that family [Eucharitidae]" (Argaman 1990:234). Interestingly, he failed to mention (although he illustrated, fig. 5) perhaps the most significant feature of this species from a phylogenetic perspective. The mandibles are falcate, much

narrower than in most species of *Perilampus*, which could be used to support his hypothesis of a close relationship with Eucharitidae (see Heraty 1994).

There is no question that this is a very different perilampine. However, the apomorphic character states mentioned above do not unequivocally confer generic status, at least not until the female is associated and described, and until affinities of *K. bouceki* with other species of *Perilampus* (s.l.) are investigated in more detail. It is almost certain that generic status for this species would only increase paraphyly in the classification of the Perilampinae. I therefore regard *Kekender* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Balintos** Argaman, 1990:241. Type species: *Perilampus parvus* Howard, 1897, by original designation. Monotypic.

*Material Examined*.—Holotype ♂: "Mount Gay Est. (Leeward side) Grenada, W.I., H.H. Smith", "Type No. 69560 U.S.N.M." [red, printed]; USNM.

*Perilampus parvus* was described from a single specimen that agrees with the label data given above; this specimen was labelled by me as holotype. The specimen agrees with Howard's brief description, except that the sex was stated as female. This species is a rather typical member of the *Perilampus fulvicornis* group; all members of this species group lack a frontal carina and the frons and vertex lack costae (as in Fig. 6). *Perilampus parvus* also has a lateral patch of setae on the second metasomal tergite (as in Fig. 20), which is found in many species of *Perilampus fulvicornis* group (q.v.). Howard (1897), in the original description, noted that this species was similar to *Perilampus politifrons* Howard, which Argaman referred to the acarinate genus *Pondoros* (q.v.).

Argaman incorrectly considered *Perilampus parvus* in the key and in fig. 36 as a carinate species with the inner orbits costate ("vertical carinules"). Argaman

did not study the holotype of *P. parvus* and based his concept of this species on a specimen, apparently identified by him and deposited in his personal collection, from Haiti; attempts to borrow this specimen were unsuccessful. It is almost certain that *Balintos* is based on a misidentified specimen, most likely on a species of the *Perilampus platygaster* group based on the black body color and fig. 36. I therefore regard *Balintos* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Yertatop** Argaman, 1991:242. Type species: *Perilampus emersoni* Girault, 1930, by original designation. Monotypic.

*Material Examined*.—♀, "Australia Biró 1900", "N.S. Wales Mt. Victoria [verso] VI, 15"; det Argaman; HNHM. ♀, "[Australia, western New South Wales] 60 W Wilcannia 22 Nov 49 E F Riek", det Riek and included in Riek, 1966: 1224; ANIC.

The specimens listed above are regarded as conspecific. This is, however, not a carinate species, although the frons and inner orbits do have very strong longitudinal costae (Fig. 3). Argaman described this monotypic genus because he regarded *P. emersoni* as the only carinate species with an extremely narrow prepectus. This form of prepectus is noteworthy only if this species is compared to carinate species, all of which have a large prepectus (as in Fig. 8). *Perilampus emersoni* is a rather typical acarinate species, referable to the *Perilampus laevifrons* group (*Mivarhis* sensu Argaman). The third metasomal tergite (T3) is not punctate and the prepectus is very narrow. There is no justification for a monotypic genus based on *Perilampus emersoni* and I therefore regard *Yertatop* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

## (2) Carinate Genera with Triangular Axillula

Argaman recognized five genera for Old World species with a distinct frontal



carina on the head (as in Figs. 1, 2). Three, possibly all four of these genera are monotypic.

**Nilgator** Argaman, 1990:242. Type species: *Perilampus mirabeau* Girault, 1930, by original designation. Monotypic.

*Material Examined.*—♀, "N. Guinea Biró [18]96, Krima Astrolabe B[ay]", det. Argaman; HNHM. ♀, [Australia] Queensland Mt. Tamb.[ourine] 20.2.1911; specimen discussed in Riek, 1966; also two specimens seen from Papua New Guinea, 1 ♀ discussed in Riek, 1966; ♂ "PAPUA NEW GUINEA: Kairiru Is., Wewak Br. O. William Borrell", "Nest No. (see 1/59) Borrell Notes, Hymenoptera Section, ANIC, August 1974"; both ANIC. Note: No host data is provided in the Borrell field notes, but the specimen was almost certainly reared from a mud-nesting aculeate wasp (Ian Naumann, *in litt.*).

Argaman did not examine the holotype of this species but I regard his exemplar as conspecific with *Perilampus mirabeau*. This a very distinctive Australian species with a striking, raised scale-like tubercle on the scutellum (fig. 35). Riek (1966) revised the Australian species of *Perilampus* and saw no reason to regard this species as anything other than a *Perilampus* and I concur. Similar protuberances occur on the mesoscutum of *Perilampus auratus* (Panzer) and these structures may function in escaping from the cocoon, pupa, or puparium of the host. *Perilampus mirabeau* has distinct punctures on the third metasomal tergite (T3) and in this and other regards is similar to species I regard as forming the *Perilampus punctiventris* group (see also discussions of *Tondolos* and *Fulaytar*). The character states used by Argaman do not warrant recognition of a monotypic genus. I therefore regard *Nil-*

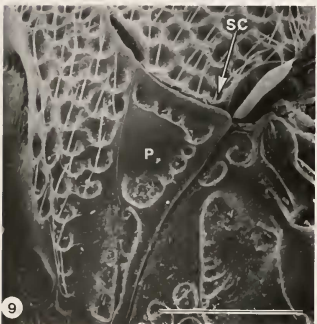
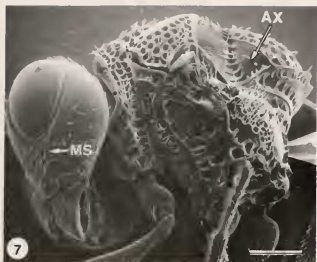
*gator* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Tondolos** Argaman, 1990:243. Type species: *Perilampus tasmanicus* Cameron, 1916, by original designation. Two species included by Argaman, also *P. cairnsensis* Girault, 1913 which is "very probably the same species as *tasmanicus*" (Bouček 1988:507).

*Material Examined.*—♀, "AUSTRALIA: Sydney: Cabramatta Georges R. valley. 7.11.1959", "N. Nikitin B.M. 1960-203". Compared with Lectotype *P. tasmanicus*, BM 5-400; ROM. ♂, "Canberra ACT coll 8 Aug 1961 P B Carne", "Hyperparasites ex *Paropsis reticulata* [Coleoptera: Chrysomelidae]", det Riek; ANIC. ♀, "[Australia] Mackay 4.[19]00", det. Argaman; HNHM.

I regard the exemplar examined by Argaman as conspecific with the two specimens identified by Riek. Argaman recognized three genera for species with parallel costae on the frons and vertex: *Yertatop*, *Nilgator*, and *Tondolos*. *Tondolos* was recognized for two nominal species without the defining features of each of the other two genera, i.e. without the tubercle on the scutellum of *Nilgator* and without the narrow prepectus of *Yertatop*. As discussed above, the type species of *Yertatop* is acarinate and most likely related to the *Perilampus laevifrons* group, all species of which have a very narrow prepectus. The distinctiveness of *P. tasmanicus* noted by Argaman is a result of the plesiomorphic absence of one feature, the tubercle on the scutellum, and a comparison with a distantly related species. I regard *P. tasmanicus* as a typical member of the *Perilampus punctiventris* group. There are no apomorphies that warrant the recognition of this genus. I therefore regard *Tondolos* Arga-

Figs. 7-12. Mesosomata of *Perilampus* species. 7. *P. chrysopae*, axillula (AX) triangular. 8. *P. hyalinus*, axillula (AX) finger-like. 9-12 detail of prepectus and lateral pronotal panel. 9. *P. tristis*. 10. *P. anomocerus*. 11. *P. stygicus*. 12. *P. fulvicornis*. MS, malar sulcus; P, prepectus; SC, scapula. Scale lines, 0.25 mm.



man as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Tiboras** Argaman, 1990:243. Type species: *Perilampus maurus* Walker, by original designation. Monotypic.

*Material Examined*.—Lectotype ♀, "[South Africa] Port Natal [verso] 49 29", "B.M. Type HYM 5.1684", "*Perilampus maurus* Walk.", "Lectotype ♀, G. J. Kerrich 1955"; BMNH. ♀, "S. AFRICA Richmond XI.1938 P. Regnard ACC. 256 Ex: *Adapsilia latipennis* ?"; ROM. Note: apparently reared from a Pyrgotidae (Diptera); see Evenhuis 1989:498. ♀, "Port-Natal Sud. Africa", "Ex Mus. Walker", det. Argaman; Argaman collection.

*Tiboras* was based on a single African specimen with a bicarinulate pronotum, identified by Argaman as *P. maurus*. He did not examine the lectotype of the type species and I do not regard his exemplar as conspecific with *P. maurus*. Argaman's exemplar does have a bicarinulate pronotum but the lectotype of *P. maurus* does not. In addition, the prepectus (Fig. 22) is very different in these two species (Note: Argaman's representation of the prepectus (fig. 106) is very inaccurate) and the second metasomal tergite is devoid of sculpture in the lectotype versus finely punctured in Argaman's exemplar. I regard Argaman's exemplar as an undescribed species of the *P. punctiventris* group, the only known species in that group with a bicarinulate pronotum (see discussion of *Fulaytar*). Notwithstanding the misidentification of the type species, this single feature does not justify generic status, especially when it is noted that closely related carinate species are variable in this character and that a bicarinulate pronotum may be plesiomorphic (see discussion of *Durgadas*). I therefore regard *Tiboras* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Fulaytar** Argaman, 1990:243. Type species: *Per-*

*ilampus singaporensis* Rohwer, 1923, by original designation. Monotypic.

*Material Examined*.—Holotype ♀: "Singapore Coll. Baker", "Type No. 24974 U.S.N.M." [red, printed], "*Perilampus singaporensis* TYPE ♀. Roh." [handwritten]; USNM. Also examined: "Pusa Coll. 21", "Pusa 10.xii.12 G.R.D.", "from nest of *Scepliphron coromandelicum* (Hyperparasite)"; USNM. Note: There is no locality data associated with this specimen but the host is recorded from India, Sri Lanka, and Burma (Bohart and Menke 1976). ♀, "[Indonesia] SUMATRA Pangherang-Pisang X.[18]90 e III.[18]91. E. Modigliani", det. Argaman; MCSN.

Argaman based his genus on a single specimen from Sumatra. However, I do not regard his exemplar as conspecific with the holotype of *P. singaporensis*, although both are referable to the *P. punctiventris* group. *Perilampus singaporensis* is very closely related to *P. mirabeaui* and both species share an unequivocal apomorphic character state, a raised scale-like tubercle on the scutellum. This structure is much more distinct in *P. mirabeaui* but is clearly evident in the holotype of *P. singaporensis*, and is completely absent from Argaman's exemplar. I regard *P. mirabeaui* and *P. singaporensis* as part of a monophyletic species group, the *Perilampus punctiventris* group, that also includes in addition to *P. punctiventris* Crawford, *P. orientalis* Rohwer, *P. luxonensis* Crawford, and Argaman's exemplar. Argaman's exemplar is not conspecific with *P. singaporensis*, the type species of *Fulaytar*, and the diagnostic feature of the genus used in the key, the absence of a bicarinulate pronotum is plesiomorphic and identical to the form of the pronotum found in the type species of *Tiboras* (see also discussion of *Tiboras*). I therefore regard *Fulaytar* as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Afroperilampus** Risbec, 1956. Type species: *Af-*

*roperilampus meloui* Risbec, by original designation. Eight included species.

**Material Examined.**—Holotype ♀ "MUSEUM, PARIS COTE D'IVOIRE, Singer-ville. G. Melou 1914", "*Perilampus Meloui* Risbec", handwritten; MNHN.

Neither the holotype or even an identified specimen of the type species of *Afroperilampus* was examined by Argaman; he apparently based his species concept on Risbec (1956), which, unfortunately, has inaccurate caricatures for illustrations. *Afroperilampus* was described by Risbec for a single species and based on wing venation, i.e., the postmarginal vein was stated in the key to genera as longer than the marginal vein. This is not true in either Risbec's illustration (unnumbered) or in the holotype.

*Afroperilampus* was regarded as a synonym of *Perilampus* by Bouček (1972). Argaman resurrected this genus for a subset of species with a triangular axillula that lack parallel costae on the face; the lateral pronotal panel is stated by Argaman (1990:209) as having "two rows of moderately large punctures opposite to prepectal triangle". The sculpture of the third metasomal tergite is stated as variable, but there are no punctures in the holotype of the type species. In his discussion of this genus, Argaman as much as stated that this is an artificial assemblage; he actually suggested that yet another new genus is required for an aggregate of the included species! In addition to concerns over monophyly, the type species does not have the configuration of the prepectus that is used in the key to differentiate *Afroperilampus* (Fig. 26) from *Tiboras* (Fig. 24) and *Fulaytar* (Fig. 25). The lateral pronotal panel is virtually identical in the type species of these three genera. I therefore concur with Bouček (1972) and regard *Afroperilampus* Risbec as a junior subjective synonym of *Perilampus* Latreille, 1809 (**REVISED STATUS**).

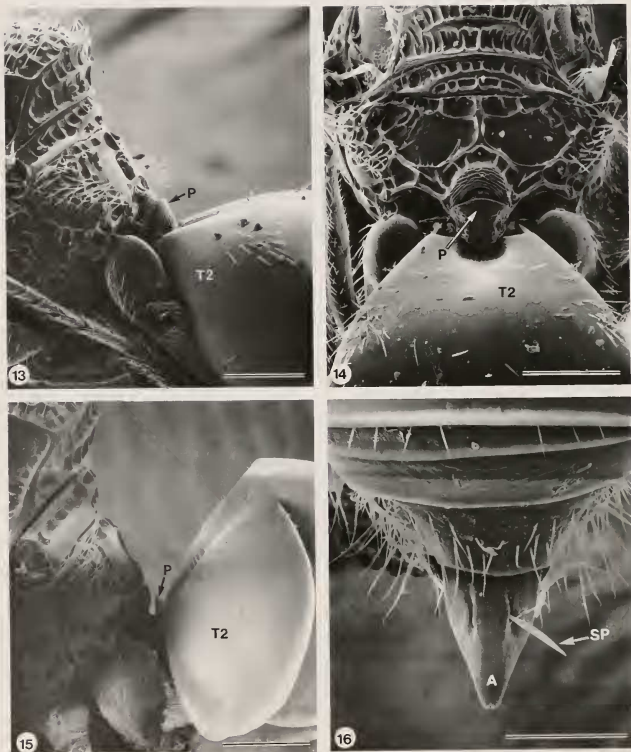
(3) Carinate Genera with a Finger-like Axillula

Three genera were described by Argaman for an exclusively New World group of species. The combination of a frontal carina on the head (Figs. 1, 2) and finger-like axillula (Fig. 8) distinguishes these species (Smulyan 1936). These species almost certainly form a monophyletic group but recognizing this clade at the generic level renders *Perilampus* paraphyletic (see Darling 1983 for a cladogram with synapomorphies of these species and *Euperilampus* + *Krombeinius*). It is in this species group where Argaman has wrecked the most havoc on the nomenclature. Eighteen described species of *Perilampus* were referred to either *Goyurfis* or *Taltonos*, and eight new species were described on the basis of inadequate material. A monotypic genus, *Durgadas*, was also proposed.

**Taltonos** Argaman, 1990:234. Type species: *Perilampus hyalinus* Say, by original designation. Sixteen included species, the *Perilampus hyalinus* group (sensu Smulyan 1936).

**Material Examined.**—*Perilampus hyalinus* group species are the most commonly collected perilampids in the New World and are distributed from Canada to Argentina and Chile. I have examined thousands of specimens in this species group from all of the major museums in North America, including: the material that formed the basis for Smulyan's (1936) revision of *Perilampus* [mainly USNM]; specimens reared as primary parasitoids of *Neodiprion* sawflies [ROM, CNC]; and specimens reared as parasitoids of Ichneumonidae, Braconidae, and Tachinidae (hyperparasitoids) attacking *Hyphantria cunea* (Drury) (Lepidoptera, Arctiidae), the fall webworm [ROM, UA].

The type material of Say's species is generally regarded as lost (Peck 1963). This is acknowledged in Argaman's checklist (1991:9) but label data are also provided for a specimen, now in his personal collection, that agrees with all of the



Figs. 13–16. 13–15, Petioles (P) and second metasomal tergites (T2) of *Perilampus* species. 13. *P. anomocerus*, lateral view. 14. *P. anomocerus*, dorsal view. 15. *P. tristis*, lateral view. 16. Aedeagus (A), dorsal view, *P. tristis*, showing laterally directed spine (SP). Scale lines, 13–15, 0.25 mm., 16, 0.10 mm.

particulars of the type material! It must be noted that the statement "Type" red label" in Argaman's checklist cannot be regarded as indicating type material; Argaman used this notation throughout his

checklist when type material is extant and deposited in other institutions (e.g., *P. maurus*). He probably regards the so labelled specimens as his exemplars of the species, but my requests for clarification of

this issue have gone unanswered. As discussed, but not clarified by Argaman, the taxonomy of *P. hyalinus* is confused by diverse host associations and modes of parasitism. The situation is still best summarized by Burks (1979:771), "This may be a species complex, rather than a single species; careful rearings have produced specimens, at present indistinguishable, that are either primary or secondary parasites."

Fortunately, this species group is very distinctive and Argaman's generic concept of *Taltonos* is concordant with the accepted concept of the *Perilampus hyalinus* group (Smulyan 1936, Darling 1983) and the question of generic status can be dealt with expediently. The same cannot be said for the problems that Argaman has created at the species level. Unless Argaman acquired Say's type material, a neotype will need to be designated for *P. hyalinus* in the context of a thorough revision. This should be a reared specimen to fix the host association and mode of parasitism of *P. hyalinus* (primary or hyperparasitoid). Argaman's types of *Taltonos* species will then need to be evaluated both with respect to the neotype and to the full range of variation in this species group. Fortunately, the types of all six of Argaman's new species of *Taltonos* are in Budapest (HNHM), not in his personal collection, and are available for study.

The *Perilampus hyalinus* group is characterized by oblique costae transversing the malar region and completely obliterating the malar sulcus (Darling 1995, figs. 11.135, 11.145). A distinct malar sulcus is present in virtually all other species of *Perilampus* (as in Fig. 7), including the species referred to *Goyurfsis* and *Durgadas* by Argaman. All species are iridescent blue or green in general body color, never black, and all species examined by me have a bicarinate pronotum (Fig. 18), as pointed out by Argaman. Oblique costae on the malar region and iridescent color are both apomorphic based on outgroup compari-

son, but are shared also with species of *Euperilampus* and *Krombeinius*. Paraphyly of *Perilampus* is a problem, as discussed in Darling (1983), but generic status for the *Perilampus hyalinus* group does not improve the situation, it only clutters the nomenclature. Moreover, as discussed below, *Durgadas pappi* further complicates the issue. I therefore regard *Taltonos* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Goyurfsis** Argaman, 1990:242. Type species: *Perilampus platigaster* Say, by original designation. Seven included species, the *Perilampus platigaster* group (sensu Smulyan 1936).

*Material Examined.*—*Perilampus platigaster* group species are also commonly collected perilampids in the New World and I have examined hundreds of specimens from all of the major museums in North America including: the material that formed the basis for Smulyan's (1936) revision of *Perilampus* [mainly USNM]. There is almost no detailed host information for any included species, but specimens have been reared from pupae of Lepidoptera, most likely as secondary parasites (hyperparasitoids).

The situation regarding Say's type material of *P. platigaster* is identical to that of *P. hyalinus*. Although generally regarded as lost, Argaman lists what could be type material in his personal collection! Again, a neotype may be required to stabilize the concept of this species, but there is no doubt that Argaman's *Goyurfsis* is but a formalization of Smulyan's (1936) *Perilampus platigaster* group. It should be noted that *P. mexicanus* Cameron, referred by Argaman to *Goyurfsis*, actually belongs to the *Perilampus hyalinus* group; the type material of this species is in the BMNH and the type listed in Argaman's checklist is spurious.

The *Perilampus platigaster* group is presently characterized by plesiomorphic states of characters when compared with

the *Perilampus hyalinus* group; the malar sulcus is distinct and all species are black. As noted by Argaman, the pronotum is not bicarinulate (Fig. 17). In order to maintain a consistent ranking with the *Perilampus hyalinus* group and in recognition of the lack of synapomorphies, I regard *Goyurffis* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Durgadas** Argaman, 1990:239. Type species: *Durgadas pappi* Argaman, by original designation. Monotypic.

*Material Examined*.—Holotype ♀, "[Brasil] Para, Rio Acara, E. Horvath, 1930/VII.25"; HNHM. ♀♀, ♂♂, "Akuriman Bol. VENEZ[uela] X 1940 P.J. Anduze; USNM, ROM.

*Durgadas* was distinguished by the following two features, both of which are found in carinate New World species of *Perilampus*: bicarinulate pronotum (apomorphic and shared with the *Perilampus hyalinus* group) and the presence of a distinct malar sulcus (plesiomorphic and shared with the *Perilampus platigaster* group). The type species of *Durgadas* is black in color, as are all species of the *P. platigaster* group, and were it not for the bicarinulate pronotum, this species would readily be referred to the *Perilampus platigaster* species group. As noted above, a bicarinulate pronotum is also found in *Euperilampus* and *Krombeinius*, and in some acarinate species of *Perilampus* (cf. *Tiboras*). The sculpture of the mesoscutum is also unusual for *Perilampus*, cross-arcuate costae are present (fig. 28 is a fairly accurate depiction of this sculpture). This type of sculpture was regarded as a synapomorphy of *Euperilampus* + *Krombeinius* (Darling 1983). The type species of *Durgadas* therefore exhibits features not only of two distinctive species groups of *Perilampus*, but also of related genera and the polarity of these character states is uncertain. A monotypic genus does nothing to clarify the situation. I therefore regard *Durgadas*

Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

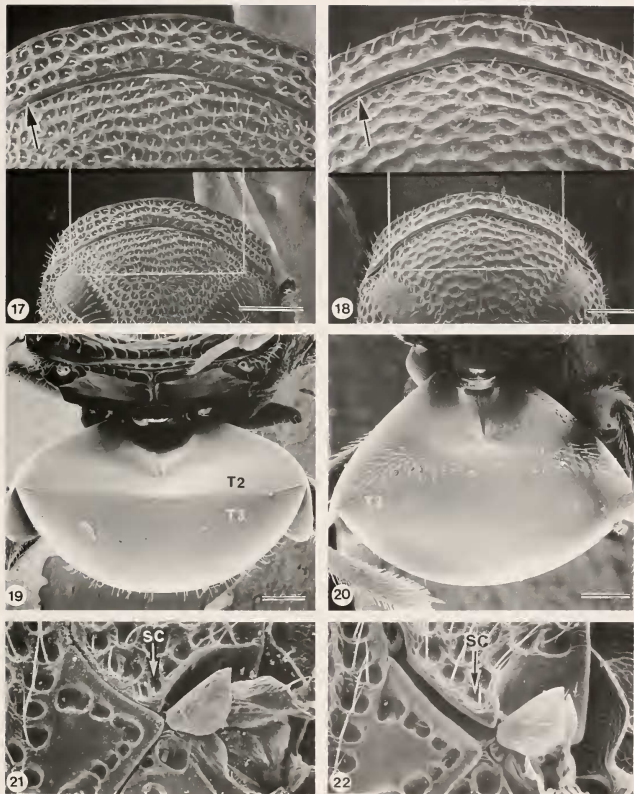
## B. The Acarinate Genera of Argaman

Seventeen genera were recognized by Argaman for species of *Perilampus* (s.l.) which he considered not having a frontal carina on the head. Four of these are monotypic and five have only two included species and by far the largest number of species (45) are referred by Argaman to *Perilampus* (s.s.), mostly by default. *Perilampus* sensu Argaman is not defined by synapomorphies but includes all species that either do not fit easily in the other acarinate genera or that were not available to him for study! As such, his generic classification is suspect even if the segregated genera were putatively monophyletic. As will be discussed below, most are either monotypic and therefore monophyletic by default, or are artificial assemblages of species. More importantly, many of these genera cut across arguably monophyletic species groups, which are based on better substantiated morphological features than those advanced by Argaman.

### (1) Synonym Based on Synonymy of Type Species

**Olarlar** Argaman, 1990:252. Type species: *Chalcis aenea* Rossi, 1790, subsequent designation, herein. Four included species.

Argaman inadvertently listed two nominal species as the type species of *Olarlar*, *Perilampus aeneus* (Rossi) (Argaman 1990: 199) and *Olarlar cocegus* Argaman (1990: 252). As First Reviser (ICZN, Article 24), I designate *Chalcis aenea* Rossi as the type species of *Olarlar* Argaman (PRESENT DESIGNATION). This typification is consistent with Recommendation 69A of the Code; *Perilampus aeneus* is one of the most common and distinctive species of *Perilampus* in the Palaearctic region. On the other hand, *Olarlar cocegus* is known only from the holotype which is deposited in



Figs. 17–22. 17 and 18, Pronotum and mesonotum, oblique dorsal view, detail above. 17. *P. platigaster*, posterior margin of pronotum not bicarinulate. 18. *P. hyalinus*, posterior margin of pronotum bicarinulate. 19–20, Second and third metasomal tergites (T2 and T3), dorsal view. 19. *P. platigaster*. 20. *P. fulvicornis*. 21 and 22, Scapula (SC), dorsolateral view. 21. *P. stygicus*, normal configuration of the scapula. 22. *P. prothoracicus*, reflexed lobe-like scapula. Scale lines, 0.25 mm.



Argaman's personal collection. Based on this typification, *Olarlar* Argaman, 1990 is a subjective junior synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY) because the type species of *Perilampus* (*Cynips italica* Fabricius, 1793) is a junior synonym of *Chalcis aenea* Rossi, 1790 (synonymy by Illiger 1807, confirmed by Steffan 1952, and accepted by Bouček 1956). More recently, Z. Bouček has studied two specimens of *Diplolepis italica* Fabricius that Rossi sent to Illiger and that formed the basis for Illiger's synonymy. Bouček has labelled a male specimen (examined, "Italien Rossi, I.", "Type", "13494", "Chalcis aenea Rossi", "Zool. Mus. Berlin", "LECTOTYPUS ♂ *Chalcis aenea* Rossi, 1790 det. Bouček, 1971" "♂ *Perilampus aeneus* (Rossius) Z. Bouček, 1972") as the lectotype of *Chalcis aenea* Rossi (PRESENT DESIGNATION). This specimen agrees with accepted usage of *Perilampus aeneus* and is deposited in the Zoological Museum, Humboldt University, Berlin.

## (2) Polyphyletic Assemblages

**Vadramas** Argaman, 1990:255. Type species: *Perilampus nigriviridis* Girault, 1912, original designation. Seven included species, including *P. maceki* Bouček, *P. cephalotes* Bouček, *P. polypori* Bouček, *P. saleius* Walker, *P. levifacies* Girault & Dodd, and *Vadramas tetar* Argaman.

*Material Examined.*—*Perilampus nigriviridis*: Lectotype ♂, PRESENT DESIGNATION, "Paraguay San Bernardino K. Fiebrig S.V. 30.6'", "6352", "Ex Coll Girault", "*Perilampus nigriviridis* ♀", "TYPE [red]", "31948", "Zool. Mus. Berlin", "Lectotype ♂ *Perilampus nigriviridis* Gir. D. C. Darling"; Zoological Museum, Humboldt University, Berlin. ♂, ♀, "[Brazil] Sao Paulo. 1928. Bury J. György", det. Argaman; HNHM. ♀, "Costa-Rica Surubres", det. Argaman; HNHM. *Vadramas tetar*: Holotype ♂, "[Nicaragua] Sierra di Managua, A. Solari [18]98"; MCSN.

Argaman (1990:256) described *Vadramas* with the caveat, "This genus is another

heterogenous one, and surely not natural". In fact, this genus is considerably more heterogenous than even Argaman imagined; the type species of the genus is in fact a carinate species with finger-like axillula, i.e., a typical member of the *Perilampus hyalinus* group (*Taltonos* sensu Argaman)! However, until the status of the type material of *Perilampus hyalinus* is clarified and the range of variation attributed to species of this species group is better documented, it is not possible to determine if *P. nigriviridis* is a valid species. Most likely it will fall as a synonym of *P. hyalinus* and *Vadramas* would be a secondary synonym of *Taltonos*.

This is yet another case where the type species is based on a misidentification; Argaman did not examine the type material of this species and his exemplar is not conspecific with the lectotype designated above. Notwithstanding the question of typification, there is little to unite the remaining included species. Three are European species perhaps related to *Perilampus micans* Dalman (Bouček 1971), and three are described Australian species. The only new species described by Argaman in this genus, *Vadramas tetar*, is a Central American species that violates the only character that Argaman used to separate this "genus" from *Sicatang*, i.e., the relative length of the malar sulcus! He stated (1990:257), "The expanded scape, narrow mesosternum and short malar sulcus places this species into the genus *Mivarhis*; but the smooth upper front, . . . into the genus *Vadramas*". There is no basis for the recognition of this genus and I therefore regard *Vadramas* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Fifirtiz** Argaman, 1990:259. Type species: *Perilampus noemi* Nikol'skaya, 1952, by original designation. Eight included species, including *P. minutalis* Steffan, *P. neglectus* Bouček, and *P. glabrifrons* Riek.

*Material Examined.*—Syntypes 2 ♀♀, Ta-

jikistan, Kondara; BMNH. ♂, "Kapa, O. Turkest" and ♀, "[Russia] Dzungarischer Ala-Tau", both det. Argaman; Argaman Collection.

Argaman did not examine type material but I regard his exemplars as conspecific with the syntypes mentioned above. This genus was described for species with a very narrow head (in dorsal view) and with a blunt ridge starting at the anterior ocellus and converging on the inner orbits just below the top of the eye (fig. 127). Bouček (1983) studied the syntypes of *P. noemi* (no lectotype has been selected) and stated that "the head seen dorsally is 2.2–2.35 times as broad as long (stout)". The blunt ridge on the head described by Argaman is not present in either the syntypes of *P. noemi* or the specimens examined by Argaman! In fact, the head of the type species in frontal view is unremarkable (fig. 15 in Bouček 1983 is an accurate representation of the head of *P. noemi*, cf. Argaman's fig. 127). Furthermore, the species included by Argaman in *Fifirtiz* are a diverse polyphyletic assemblage. For example, *P. neglectus* is regarded as a member of the *Perilampus tristis* group (Bouček 1956); and *P. minutalis* (Steffan 1952) and *P. glabifrons* (Riek 1966) are closely related to *P. laevifrons*, which Argaman designated as the type species of *Mivarhis* (q.v.). There is no justification for this generic concept and I therefore regard *Fifirtiz* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Sicatang** Argaman, 1990:257. Type species: *Sicatang catilus* Argaman, 1990, by original designation. Note: This species is referred to as *Sicatang catilius* [*lapsus calami*] in Argaman (1991). Two species, also *S. picus* Argaman.

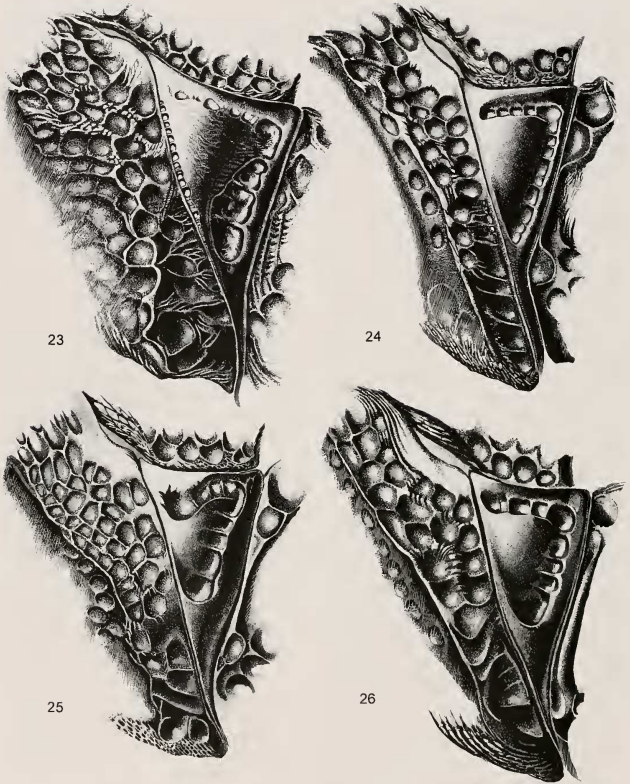
*Material Examined*.—*Sicatang catilus*, Holotype ♂, "[Turkey] Tschukur-hissar, Anatol."; Argaman Collection. *Sicatang picus*, Holotype ♀, "KOREA, Prov. Gangvon district On-dzong, Kum-gang san, along Ok-ru dong, 300–600m", "No. 317,

5 August 1975 leg. J. Papp et A. Vojnits", "Hym. Type 6563 Mus. Budapest"; HNHM.

Argaman described *Sicatang* for two new species that he apparently could not accommodate in his existing genera because of the combination of a short malar sulcus and a smooth vertex. A short malar sulcus is characteristic of the *Perilampus laevifrons* group (*Mivarhis* sensu Argaman), which Argaman restricts to species with a "wrinkled" or sculptured vertex. Argaman experienced the same difficulty with the specimens he described as *Vadramas tetar* (see discussion of *Vadramas*), but he resisted the temptation to describe yet another new genus for *V. tetar*. Not so in the case of *Sicatang*. I regard the sculpture of the vertex as variable in the *Perilampus laevifrons* group and I would refer *Sicatang catilus* to this species group based primarily on the size and shape of the prepectus (Fig. 27). However, *Sicatang picus* is not a member of the *Perilampus laevifrons* group; the prepectus does not have a narrow dorsal lobe (Fig. 28). This genus is almost certainly an artificial assemblage and I therefore regard *Sicatang* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Vaktaris** Argaman, 1990:248. Type species: *Perilampus auratus* Panzer, 1798, original designation. Four species, including *P. igniceps* Cameron; *P. brisbanensis* Girault is provisionally included.

*Material Examined*.—*Perilampus auratus*: ♂, "[Italy] Calabria Aspromonte Paganetti", det Argaman; HNHM. ♀, "Bulgaria, 1928. Madara. Biró [verso] VII 20", det. Argaman; HNHM. ♀, "[Italy] Voltaggio, App. Genovesa 20.VII a 30.VIII. F. Solari", det. Argaman; MCSN. ♂, ♀, "[Italy] N. S. dalla Vittoria Apenmino di Genova, G. Mantero VI-1936", det Argaman; MCSN. ♂, "Germany, Darmstadt coll. Meyer 10.6.27"; ♀, "[Russia] CRIM."; both det. S. Novitzky; ROM. *Perilampus igniceps*: Lectotype ♀, PRESENT DESIGNATION, "[Argentina]



Figs. 23-26. Prepectus and lateral pronotal panel of *Perilampus* species. 23. *P. bouceki*, Holotype. 24. *P. maurus*. 25. *P. singaporensis*. 26. *P. meloui*, Holotype.

Mendoza", "P. Cameron Coll. 1914-110", "*Perilampus igniceps* Cam. Type", "BM Type Hym 5.405", "*Perilampus* This species is near *auratus* Panzer G.J. Kerrich det.

1959"; BMNH. *Perilampus brisbanensis*: 2 ♀♀, "[Australia] Illawarra N.S. Wales H. Petersen", ANIC; "[Australia] Brisbane: H. Hacker 27.10.14", USNM.

Argaman's concept of *P. auratus* agrees with other authors, which is not too surprising since this is one of the most distinctive species of *Perilampus*. Argaman defined *Vaktaris* on the basis of a single morphological feature, a scale-like protuberance on the mesoscutum. Argaman (1990:248) noted that, except for this feature, *Vaktaris* "is the most heterogenous genus among the others treated herein". He goes on to explain morphological variability in a number of features that elsewhere he uses to confer generic status, e.g., shape of the prepectus and size of prepectus relative to the lateral pronotal panel. In addition, *P. brisbanensis*, one of two additional species "that probably belong here" (1990:249), has a distinct frontal carina! There are many undescribed species in the New World with a tubercle on the mesoscutum, which will further extend the range of variation of such a monothetic "genus". Argaman's suggestion is to "subdivide this taxa [sic] into more homogenous units" (1990:249). My conclusion is that a tubercle on the scutellum has evolved independently a number of times and is not a good indicator of phylogenetic affinities; it may well be a functional structure related to emergence of the adult from the host pupa, puparium, or cocoon. As presently defined, the genus is not demonstrably monophyletic, and is most likely polyphyletic. I therefore regard *Vaktaris* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

### (3) Monotypic Genera

*Itonayis* Argaman, 1990:248. Type species: *Perilampus micans* Dalman, 1820, by original designation. Monotypic.

*Material Examined*.—♀, "[Hungary] Simontornya. Hung. occ. 1912 VI.18-K", det Argaman; HNHM. ♀, "[England] Bred from oak in B.M. June. 1928 F. Laing", "ex. larvae *Lyctus linearis*", "♀ *Perilampus micans*, Dalm. J. Waterston det."; BMNH;

this specimen was reared from the same host as listed in the original description.

Argaman did not examine the holotype of *P. micans* but I regard his exemplar as conspecific and in agreement with accepted usage. As noted by Argaman, this species does have a "frenal crest" on the scutellum (frenum present) and the prepectus is large, forming an equilateral triangle with coarse punctures on all three sides. There are, however, additional species that share these features and a number of other attributes with *P. micans* (the *Perilampus micans* group of Bouček 1971); e.g., *P. polypori* Bouček (which Argaman places in *Vadramas*). Bouček (1956, 1971) noted that species of the *Perilampus micans* group also have a distinct uncus on the stigma. Possibly related to this species group according to Bouček (1971) are *P. aeneus* and *P. ruschkai* Hellén, which Argaman refer to *Olarlar* and *Burksilampus* (!), respectively. *Steffanolampus salicetum* (Steffan) also has these morphological features and both *S. salicetum* and *P. micans* are regarded as primary parasitoids of xylophagous beetles. As discussed above, I regard *Steffanolampus* as an outgroup, possibly the sister group of *Perilampus* (s.l.), suggesting that the morphological features used by Argaman to define *Itonayis* are plesiomorphies. All of these considerations suggest that a monotypic genus for *Perilampus micans* is inappropriate, or at least premature. I therefore regard *Itonayis* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

*Bagdasar* Argaman, 1990:250. Type species: *Bagdasar ammonius* Argaman, 1990, by original designation. Monotypic.

*Material Examined*.—Holotype ♀, "SOUTH AFRICA Natal Pietermaritzburg", "Ashturton 3.X.83 A. Freidberg"; Argaman Collection.

This is another previously undescribed species with a raised scale or tubercle on the dorsum of the scutellum (fig. 99). The scale is in a similar location on the scutel-

lum as that of *P. mirabeaui* (*Nilgator* sensu Argaman), but Argaman's species is not closely related to this species and does not belong to the *P. punctiventris* group; the head is acarinate and the third metasomal tergite is not punctate. The prepectus is much broader than the adjacent pronotal panel and the metasoma is flat and elongate, not strongly arched, similar in these regards to *P. ruficornis* and *P. auratus*. If, in fact, *B. ammonius* is closely related to these two species, the raised scale on the scutellum is not remarkable; *P. auratus* has a raised scale on the mesoscutum and low protuberances on the scutellum, and protuberances are completely absent from *P. ruficornis*. Argaman, perhaps realizing the weakness of the scale on the scutellum as a generic character (although he used this feature to define *Nilgator*, q.v.), supported his generic concept by stating that the anellus is "unusually" long. In fact, his illustration of the antenna (fig. 115) is very inaccurate, e.g. an 8-segmented funicle and a quadrate anellus are represented. In fact, the antenna of the holotype is rather typical in structure to most other species of Perilampinae. A monotypic genus does nothing to improve the classification, particularly if this species forms a monophyletic group with *P. ruficornis* and *P. auratus*. I therefore regard *Bagdasar* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809, (NEW SYNONYMY).

#### (4) Segregates of the *Perilampus fulvicornis* Group

Smulyan (1936) recognized the *Perilampus fulvicornis* group for seven small, black, acarinate species found in America north of Mexico. The defining features, discussed only in the key, were that the first tergite of the metasoma is petiolate and that the petiole does not have a raised flange or scale on the anterior margin (cf. *P. anomocerus* group, Figs. 13-15) and the sculpture of the petiole is rugose (Figs. 20, 30-32). These species appear to be unrelated to small black species of *Perilampus*

from other regions of the world, most of which do not have a distinct petiole. *Burksilampus* was described for a New World species with a very long petiole (Fig. 33), suggesting that this species could be regarded as a member of the *Perilampus fulvicornis* group. However, there are significant differences in both the sculpture of the petiole (alveolate or coriaceous versus rugose) and the malar region of the head (malar sulcus absent versus present) between the type species of *Burksilampus* (*Chrysolampus anobii* Burks) and species of the *P. fulvicornis* group (Darling, 1995a). The length of the petiole is variable across species and sexes, and is usually much longer in males (Figs. 30, 31). The *Perilampus fulvicornis* group may be the most speciose species group in the New World, where there are many undescribed species. Argaman described the following three genera for species of the *Perilampus fulvicornis* group.

**Naspojar** Argaman, 1990:261. Type species: *Perilampus fulvicornis* Ashmead, 1886, by original designation. Five included species: *P. philembia* Burks, *P. muesebecki* Smulyan, *P. similis* Crawford, *P. minutus* Girault

*Material Examined.*—*Perilampus fulvicornis*: Holotype ♂, "E. Fla. Ashmead", "♂", "Type No. 22886 USNM", "Perilampus fulvicornis Ashm."; USNM. *Perilampus minutus*: Lectotype ♀, PRESENT DESIGNATION, "Paraguay (San Bernardino) K. Fiebrig S.V.", "4506", "Ex Coll Girault", "minutus", "TYPE [red]", "31947", "Zool. Mus. Berlin", "Lectotype ♀ *Perilampus minutus* Gir. D. C. Darling"; Zoological Museum, Humboldt University, Berlin. *Perilampus philembia*: Paratype ♀, ♂ Peru: Tingo Maria; see Burks, 1969 for details; USNM.

There is considerable uncertainty surrounding the identity of *P. fulvicornis* in North America; there are numerous host records and morphologically distinctive forms are currently referred to this species both in collections and in the literature.

Argaman apparently based his concept of *P. fulvicornis* on the single male specimen in his personal collection, which may or may not be conspecific with the holotype. Argaman noted that species of *Naspojar* have a dense patch of setae laterad on the second metasomal tergite, T2 (Fig. 20). However, this is only true for three of the five species included by Argaman in *Naspojar* (absent from *P. minutus*, *P. philembia*) and there are also many species not studied by Argaman (and therefore left in *Perilampus*) that are petiolate with a distinct patch of setae laterad on T2 (e.g., *P. gahani* Smulyan, *P. parvus* Howard, and *P. politifrons* Howard). Both *P. minutus* and *P. philembia* do not have the patch of setae on T2 and are more closely related to *P. prothoracicus* Smulyan (cf. *Zuglavas*). The question of generic status for the *Perilampus fulvicornis* group of Smulyan, and including at least *P. robertsoni* (Ecalibur, q.v.), and perhaps *P. prothoracicus* and *P. stygicus* Provancher (*Zuglavas*, q.v.), is complicated and will require a comprehensive study of the New World species of *Perilampus*. For example, the patch of setae on T2 is also found in species of the *Perilampus anomocerus* group (Figs. 13, 14) and may be plesiomorphic at the level of the *Perilampus fulvicornis* group. Clearly, it is inappropriate to burden the nomenclature with an additional generic name at this time. I therefore regard *Naspojar* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Zuglavas** Argaman, 1990:251. Type species: *Perilampus stygicus* Provancher, 1888, by original designation. Two species, also *P. prothoracicus* Smulyan.

**Material Examined.**—*Perilampus stygicus*: Lectotype ♀: [Canada, Quebec, Cap Rouge] "1599" [yellow], "*Perilampus stygicus* Prov."; Laval University, Sainte-Foy, Québec. Designated by Gahan and Rohwer, 1918. Lectotype labels of Comeau 1947, Gahan and Rohwer 1915, and Barron 1971. ♀, ♂ "[USA] NY: Tompkins Co.

White Church IX-11-1981 M. Sharkey"; ROM. ♀, ♂ "U.S.A.: Michigan Ann Arbor ix-x 1975, Fitton"; BMNH. *Perilampus prothoracicus*: Holotype, ♀: "[USA] Loui[siana] 2568", "Collection CF Baker", "Type No 49785 USNM", "*Perilampus fulvicornis* var. *prothoracicus* Type Smul."; USNM. ♀, ♂ "[Canada] Ludlow N.B. [various dates] D.P. Pielou Ex: Polyporum betulinus"; CNC, ROM. ♀, "[USA, NY] Amer. sept. Horv. 1907", "Adirondak Long Lake", det. *Zuglavas stygicus* by Argaman; HNHM. Note: Argaman did not examine the type material of these two species and, as discussed below, confused these two species.

*Perilampus stygicus* is one of the most distinctive species of *Perilampus* in North America; both males and females have a distinct infusate band on the forewing below the marginal vein and the lateral pronotal panel is rounded (Fig. 11). As Argaman noted, this species is closely related to *P. prothoracicus*. These are the only two species referred by Smulyan (1936) to the *Perilampus fulvicornis* group that lack a distinct patch of setae on the lateral margin of T2. Until Argaman's study, *P. stygicus* was most easily separated from *P. prothoracicus* by the coloration of the forewing; *P. prothoracicus* does not have a distinct infusate region on the forewing, the wing is either hyaline or has a very faint darkened region below the marginal vein. Argaman has discovered another important morphological feature to distinguish these two species, the shape of the scapula. Argaman stated (1990:212) that in *P. stygicus*, the type species of *Zuglavas*, the lateral lobe of the scapula is "deeply emarginate anterad to tegula, producing an acute, backward directed peg-like structure" (fig. 104). However, he misinterpreted the distribution of this character because of a misidentified specimen(s). This reflexed lobe-like configuration of the scapula is not present in *P. stygicus* (Figs. 11, 21), but is present in *P. prothoracicus* (Fig. 22). The scapula of *P. stygicus* (Fig. 11) is virtually

identical to that of *P. tristis* Mayr (Fig. 9) and *P. fulvicornis* (Fig. 12). The apomorphic configuration of the scapula is therefore found in only one of the two species included by Argaman in *Zuglavas* and not in the type species (*P. stygicus*)! A monotypic genus based on this apomorphic configuration of the scapula (for *P. prothoracicus*) is inconsistent with the close relationship of this species and *P. stygicus*. I therefore regard *Zuglavas* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Ecalibur** Argaman, 1990:260. Type species: *Perilampus robertsoni* Crawford, 1914, by original designation. Monotypic.

*Material Examined*.—Holotype ♀ "[USA] [No.] 9729", "Robertson S. Illinois", "♀", "Type No. 18299 U.S.N.M.", "*Perilampus granulatus* Type ♀"; USNM.

Argaman based his concept of *P. robertsoni* on a single male in his personal collection. My attempts to borrow this specimen have not been successful. From a study of Argaman's key it is apparent that generic status was awarded to this species based on the following features (190:227): "Head with residual scrobal carina primitively retained"(!) and T2 with a "not very dense patch a pale pubescence". There is no diagnosis of *Ecalibur* and the key separates the type species from *Naspojar* on the basis of the features listed above and on features of the surface sculpture. Smulyan (1936) remarked that the head has a well developed keel "sometimes with a semblance of a carina", but appreciated the natural affinities of this species even without apparently realizing the importance of the patch of setae on T2. Argaman, on the other hand, realized that this species has a patch of setae on T2, but still erected a monotypic genus because of the structure of the head. *Perilampus robertsoni* is clearly a member of the *Perilampus fulvicornis* group. I therefore regard *Ecalibur* as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

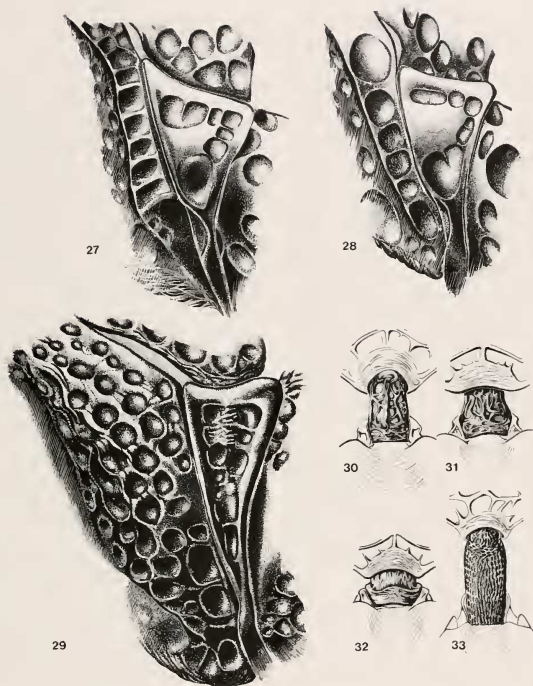
#### (5) Segregates of the *Perilampus anomocerus* Group

Smulyan (1936) recognized the *Perilampus anomocerus* group for two acarinate species found in America north of Mexico, *P. anomocerus* Crawford and *P. granulatus* Crawford. The distinguishing feature of this species group, discussed only in the key, is that the anterior margin of the first metasomal tergite (petiole) is strongly elevated as a flange or scale that can completely cover the neck or nucha of the propodeum (Figs. 13, 14). Both of these species also have a distinct lateral patch of very long setae on T2 (Fig. 14) and also share numerous other morphological features. Argaman described a genus for each of these species.

**Ihambrek** Argaman, 1990:252. Type species: *Perilampus chrysonotus* Förster, 1859, by original designation. Two species, also *Perilampus anomocerus* Crawford.

*Material Examined*.—*Perilampus chrysonotus*: Lectotype ♀, PRESENT DESIGNATION, [Germany] "[Germany] Bopp[ar]d.", "Collect. G. Mayr", "*P. chrysonotus* Förster, Type", "Lectotype ♀ *Perilampus chrysonotus* Förster D. C. Darling", Paralectotypes 1♂, 1♀, same collector and type labels; NMV. ♀, ♂ [Central Europe], det. S. Novitzky; BMNH. *Perilampus anomocerus*: Holotype ♀, "[USA] Colo[rado] [No.] 1584", "Collection CF Baker", "♀", "Type No. 18302 U.S.N.M.", "*Perilampus anomocerus* Cwfd Type ♀"; USNM.

Specimens identified as *P. chrysonotus* by Argaman were not available for study. This is one of the most distinctive Palearctic species and it is likely that Argaman's exemplar is conspecific with the lectotype. Argaman (1990:213) distinguished *Ihambrek* in the key on the basis of the configuration of the mesosomal sclerites, i.e., "Spiracle between pro- and mesonotum indistinct, covered, the notal sclerites not emarginate there as usual" and "Upper border of prepectus meeting directly and perpendicularly the pronotum".



Figs. 27-33. 27-29. Prepectus and lateral pronotal panel of *Perilampus* species. 27. *P. catilus*, Holotype. 28. *P. picpus*, Holotype. 29. *P. chrysonotus*. 30-32. Petiole of *Perilampus* species, dorsal view. 30. *P. stygicus* ♂. 31. *P. stygicus* ♀. 32. *P. fulvicornis* ♀. 33. Petiole of *Burksilampus anobii* ♀, dorsal view.

tum." These statements are inaccurate based on the material I have examined. However, in both *P. chrysonotus* (Fig. 29) and *P. anomocerus* (Fig. 10), the mesonotum is emarginate, and the upper border of the prepectus is horizontal only in *P. chrysonotus* (Fig. 29, cf. Fig. 10, *P. anomocerus*). What is interesting is that both spe-

cies have a scale-like petiole (Figs. 13, 14), a character apparently missed by Argaman although discussed by Smulyan (1936). The petiole is virtually identical in these two species and the scale-like petiole is found only in these two species, in *P. granulatus*, and in undescribed species of the *P. anomocerus* group. Significantly, *P.*



*chrysonotus* does not have a patch of setae laterad on T2; these setae are restricted to New World species of the *Perilampus anomocerus* and *P. fulvicornis* groups. Also, the structure of the prepectus and lateral pronotal panel is different in the Old World and New World species; in *P. chrysonotus* there is a distinct and continuous suture between these sclerites (Fig. 29), which is absent from *P. anomocerus* (Fig. 10). In conclusion, not only is the diagnostic feature of *Ihambrek* not present in the type species, but the two included species almost certainly do not form a monophyletic group. I therefore regard *Ihambrek* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

**Dekterek** Argaman, 1990:262. Type species: *Perilampus granulosus* Crawford, 1914, by original designation. Two species, also *Perilampus kaszabi* Bouček.

*Material Examined.*—*Perilampus granulosus*: Holotype ♀, "[USA] Alab[ama] [No.] 1967", "Collection CF Baker", "Type No. 18305 U.S.N.M.", "*Perilampus granulosus* Type ♀"; USNM. *Perilampus kaszabi*: Paratype ♀, Mongolia; see Bouček 1983 for details; BMNH.

Argaman studied a single female of *P. granulosus*, which is apparently now deposited in his personal collection. He based his generic concept on the structure of the prepectus and mesepisternum; however, the prepectus of the holotype is virtually identical to *P. anomocerus* and bears little resemblance to Argaman's illustration (fig. 69, cf. Fig. 10). It is likely that Argaman's exemplar was misidentified; he did not mention the granulate sculpture laterad on the scutellum that is diagnostic for this species (Crawford 1914, Smulyan 1936). Furthermore, he stated that T2 is glabrous, but a distinct patch of setae is present in the holotype (as in *P. anomocerus*, Figs. 13, 14). *Perilampus granulosus* is unquestionably closely related to *P. anomocerus* (Smulyan 1936) and I therefore regard *Dekterek* Argaman as a ju-

nior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

(6) Segregates of the *Perilampus tristis* Group

This informal species group has been used by European authors (Bouček 1956, Steffan 1952) for small black species that have the prepectus very closely associated with the lateral pronotal panel. There is a distinct suture along the pronotum dorsad, but ventrad the suture is obliterated by vertical rows of alveolae on both the pronotal panel and prepectus (Fig. 9). The first metasomal tergite (petiole) is transverse with a raised scale (Fig. 15); the scale is narrower and less heavily sculptured than in *P. chrysonotus* and *P. anomocerus* (Figs. 13, 14). Argaman used "fusion" of the prepectus to separate a group of 6 genera, three of which were discussed above as segregates of the *Perilampus fulvicornis* group and three of which are discussed here as segregates of the *Perilampus tristis* group.

**Pondoros** Argaman, 1991:1. Type species: *Perilampus tristis* Mayr, 1905, by original designation. Nine included species.

*Material Examined.*—*Perilampus tristis*: Lectotype ♂, PRESENT DESIGNATION, "[Germany] Först.", "Collect. G. Mayr", "Peril. tristis G. Mayr, Type", "TYPUS" [red, printed], "Lectotype ♂ *Perilampus tristis* Mayr D. C. Darling", Paralectotypes 2♂♂, 3♀♀ [Germany, all labelled with red type label]; NMV. Note: The syntype series in Vienna also contains 5♂♂ and 2♀♀ (on 6 pins) that are not conspecific with the Lectotype, det. *P. minutalis* Steffan, D. C. Darling. ♀, "[Germany?] Mödling Schmidt", det. Argaman; HNHM. ♂, ♀ "Switzerland: H. L. Parker 1957 hyper. *Ryacionia buoliana*"; ROM.

*Perilampus tristis* is a very distinctive species that is rather common in European collections. The most striking characteristic of this species is the long, paired, laterally-directed spines on the aedeagus (Fig. 16). These spines are clearly visible

on the lectotype and in male specimens that were introduced into North America. This species is a common hyperparasitoid of the codling moth and was apparently inadvertently introduced into North America, where the species was described as *P. capitatus* by Smulyan (1936) and later synonymized by Steffan (1952). The name *P. tristis* has been applied uncritically to many small black species of *Perilampus* in European collections and this lectotype designation will stabilize the nomenclature for this species. It should be noted that Argaman's lectotype designation for *P. tristis* (1991:16) is invalid; the specimen designated is from his personal collection and not one of the syntypes!

Argaman based his concept of *Pondoros* on a correctly identified specimen of *P. tristis*, although his illustration of the prepectus is very inaccurate (fig. 111, cf. Fig. 9). He distinguished *Pondoros* from other "genera" with a "fused" prepectus by the presence of a plical carina on the propodeum and the postmarginal vein longer than the radial vein. Both of these features are widely distributed in *Perilampus* and are most likely plesiomorphic. The *Perilampus tristis* group remains rather poorly defined. The close association of the prepectus and pronotum ventrad (Fig. 9), and a low scale on the petiole (Fig. 15) is all that delimits this species group. A similar form of prepectus is found in the *Perilampus fulvicornis* group (*Naspojar* sensu Argaman) (Figs. 11, 12), but the form of the petiole differs (Figs. 30–32). Until the affinities of *P. tristis* are better understood, it is premature to recognize separate genera or a monotypic genus for *P. tristis*. I therefore regard *Pondoros* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1990 (NEW SYNONYMY).

**Lufarfar** Argaman, 1991:3. Type species: *Lufarfar rainerius* Argaman, 1991, by original designation. Two included species.

*Material Examined*.—*Lufarfar rainerius*: Holotype ♀, "[Egypt] Coll. A. Mochi VII.6.1935

Gebel Asfar Egitto"; MCSN. Paratype ♀, "[Egypt] Coll. A. Mochi 6.VII.1936 Gebel Asfar Egitto"; MCSN.

Argaman distinguished *Lufarfar* from *Pondoros* by three attributes: absence of a plical carina on the propodeum, postmarginal vein shorter than stigmal vein (his radial vein), and absence of a malar sulcus. However, the malar sulcus is present in the paratype that I examined and the postmarginal vein is shorter than the stigmal vein; his figure 78 is an accurate depiction of the relative lengths of these veins. The absence of a plical carina was regarded by Argaman as a result of further reduction of sculpture laterally on the propodeum, a characteristic of *P. tristis*. In *P. tristis* there is a large glabrous area, without any sculpture, ventrally on the propodeal callus (Fig. 15). The type species of *Lufarfar* also has a smooth area that extends mesally to obliterate the plical carina (fig. 77). In my opinion, these characters do not merit generic distinction, at least not until the full range of variation is assessed in the *Perilampus tristis* group. I therefore regard *Lufarfar* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY), based on the synonymy of *Pondoros* with *Perilampus* discussed above.

**Bukbakas** Argaman, 1990:261. Type species: *Perilampus microgastris* Ferrière, 1930, by original designation. Four included species.

*Material Examined*.—*Perilampus microgastris*: Paralectotype ♀, "[India] Rahatgaon, Hoshangabad, C.P., S. N. Chatterjee 23.IX.1926", "Parasite on *Apanteles machaeralis* Wilk.", ROM. ♂, ♀ "KOREA, Prov. South Pyongan, Nampo, Wauto", "22.IX.1979, leg. Dr. H. Steinmann et Dr. T. Vásárhelyi, No. 563", det. Argaman; HNHM.

Argaman based his concept of *P. microgastris* on a single female from Korea which I regard as conspecific with the paralectotype. However, he stated that both *Pondoros* and *Lufarfar* have a deep longitudinal furrow on the vertex, which is ab-

sent from *P. microgastris*. This character is the main reason for separating *Pondoros* and *Lufarfar* from *Bukbakas* in the key and is therefore critical in evaluating the status of *Bukbakas*. I can see no major differences in the vertex of the type species of these three genera. I agree that the vertex is smooth in *P. microgastris*, but a distinct furrow is not present in *P. tristis* (*Pondoros* sensu Argaman) (Fig. 5) or in *P. rainerius* (*Lufarfar* sensu Argaman). Argaman distinguished *Bukbakas* from the *Perilampus fulvicornis* group (*Naspoyar* sensu Argaman) by the profile of the mesosoma (fig. 136). Not only does his illustration of *Bukbakas* not agree with the material I have examined, but the profile of the mesosoma in *P. microgastris* falls within the range of variation found in the *Perilampus fulvicornis* group. There is nothing remarkable about *P. microgastris*, and earlier authors (Ferrière 1930, Bouček 1983) have suggested that this species is closely related to *P. tristis*. On the basis of both a lack of morphological criteria and possible affinities with *P. tristis*, I regard *Bukbakas* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

(7) The *Perilampus laevifrons/chrysoepae* Group

The *Perilampus* species that are primary parasitoids of lacewings (Neuroptera: Chrysopidae) have been regarded as belonging to the *P. chrysoepae* group in the New World (Smulyan 1936) and the *P. laevifrons* aggregate or group in the Old World (Kerrich 1958, Bouček 1983). These species all have a very narrow prepectus that appears distinctly separate from the lateral pronotum (Fig. 7) and a short malar sulcus (Fig. 7), but as discussed by Bouček (1956) and Kerrich (1958), the most remarkable feature of these species is the strongly expanded scape of the males, which has resulted in modifications to the lower face in certain species. There still remains uncertainty about the possibility of Holarctic species in this group. Argaman

referred most of these species to the genus *Mivarhis*, which he separates from *Perilampus* (s.s.) by a single character, i.e., malar sulcus half as long as front margin of malar cavity *versus* as long as front margin of malar cavity. As diagnosed in the key, species referred to both of these genera have the face sculptured; the ocular-ocular region has "irregularities, coarse rugulae, wrinkles, or costulae" and the face between the malar sulcus and the clypeus has "wrinkles or rugulae, occasionally only in its extreme inner corner" (1990:215). And as discussed below and in the previous treatments of *Sicatang*, *Vadramas*, and *Fifirtiz* (q.v.), there are species with smooth vertices that agree in most other regards with the *Perilampus laevifrons/chrysoepae* group.

**Mivarhis** Argaman, 1990:255. Type species: *Perilampus laevifrons* Dalman, 1822, by original designation. Eleven species, including *P. chrysoepae* Crawford, *P. aureoviridis* Stephens in Walker, and *P. masculinus* Bouček.

*Material Examined*.—*Perilampus laevifrons*: ♀, "Yugoslavia Dubrovnik", "1967. VIII. 10–11 leg. Zombori", det. Argaman; HNHM. ♂, ♀ "[Sweden] G. Sandon A. Jansson", Det. G. J. Kerrich 1958; ROM. ♂, "S. ENGLAND. Buck. Loadwater, Bouček 6.VII.75", det. Z. Bouček 1982; ROM. *Perilampus chrysoepae*: ♀, USA, California Ex: *Chrysopa californica*; ROM. *Perilampus aureoviridis*: ♂, ♀ Mongolia, det. *P. lacunosus* Bouček, 1982; ROM. *P. masculinus*: Paratype ♀, Czech Republic; ROM.

For European species, Argaman's concept of *Mivarhis* is identical with the *Perilampus laevifrons* group sensu Bouček (1983). Also included by Argaman is *P. chrysoepae*, a North American species closely related to Old World *P. laevifrons* and *P. aureoviridis*. Excluded by Argaman was the Nearctic species *P. rohiweri*, which was placed in the *P. chrysoepae* group by Smulyan (1936); this species has a smooth vertex, which precludes placement in *Mivarhis* as defined by Argaman. Species in other Argaman genera (e.g., *Vadramas*, *Sica-*

*tang*, *Fifirtiz*) also have a smooth vertex but agree in most other regards with the *Perilampus laevifrons/chrysopae* group. Furthermore, this genus is separated from *Perilampus* by a single character, the relative length of the malar sulcus, a highly variable character that Argaman himself uses many times in his key to distinguish genera. As presently defined, recognition of the genus *Mivarhis* does not improve our understanding of the phylogenetic relationships of the Perilampinae. I therefore regard *Mivarhis* Argaman as a junior subjective synonym of *Perilampus* Latreille, 1809 (NEW SYNONYMY).

#### (8) The Core Genus, *Perilampus*

**Perilampus** Latreille, 1809. Type species: *Cynips italica* Fabricius, 1793:103, subsequent designation by Westwood (1840); = *Perilampus aeneus* (Rossi), 1790, synonymy by Illiger 1807, confirmed by Steffan 1952, and accepted by Bouček 1956.

*Cinipsillum* Lamarck, 1817:156. Type species: *Chalcis violacea* Panzer, 1804 [auct. 1805]: 88 (fig. 15), subsequent designation by Gahan and Fagan (1923); = *Perilampus ruficornis* (Fabricius), 1793, synonymy by Bouček (1956).

*Cynipsillum* Lamarck; Agassiz, 1845:325. Incorrect subsequent spelling. Note: Although *Cynipsillum* was probably intended as an emendation of *Cinipsillum* (Agassiz cited Lamarck) the action does not comply with the requirements of Article 33 of the Code and therefore *Cynipsillum* is properly regarded as an incorrect subsequent spelling and is not an available name. The type species designation for *Cynipsillum* by Gahan and Fagan (1923) should be applied to *Cinipsillum*. Gahan and Fagan provided a citation of Lamarck's genus, but with the orthography of Agassiz. In typifying Lamarck's genus they were trying to effect an objective synonymy with *Perilampus*, which they considered (incorrectly) was also typified by *Chalcis violacea* Panzer, 1804.

*Afroperilampus* Risbec, 1956:184. Type species: *Afroperilampus meloui* Risbec, 1956, by original designation. Synonymy by Bouček (1972).

*Material Examined*.—*Perilampus aeneus*: ♀, "AUSTRIA: Wien 25.8.60 S. Novitzky",

det. Bouček 1982; ROM. ♂, "Austria: Vienna dist.: Mödling Novitzky 12.9.52", det. DC Darling; ROM. 2♀♀, 2♂♂, "[Hungary] Ex: larvis Athaliae colibri", det. Szelenyi (*P. italicus* Panzer); ROM. 2♀♀ "[Italy] Rosignano, (Piemonte) 15-IX-1883", "Collezione Gribodo" and "Rosignano, (Piemonte) 10-IX-1881", "Collezione Gribodo", both det. Argaman; MCSN.

As discovered by Z. Bouček in 1981 (*in litt.*), the type species of *Perilampus* has been incorrectly regarded as *Diplolepis violacea* Fabricius, 1804, designated by Latreille, 1809 (e.g., Burks 1979, Bouček 1988, Argaman 1990:253). There are two problems with this typification. Fabricius (1804) did not describe *Diplolepis violacea*, he only transferred Panzer's species from *Chalcis* to *Diplolepis*; Fabricius clearly cited "*Chalcis violacea* Panz. Fn. Germ. 88. tab. 15." Secondly, Latreille (1809) is not a valid type species designation for the genus. Two species were listed, "*Périlampe. Diplolepis violacea*, Fab.; ejusd. *D. ruficornis*." and, therefore, ICZN Direction 4 (Hemming 1954) excludes this typification. It does not matter that these are presently regarded as subjective synonyms; more than one nominal species is involved in Latreille's discussion of *Perilampus*. The typification then becomes Westwood (1840:67): "*P. italicus* Fab". The original combination is actually *Cynips italica* Fabricius. This species was also regarded as the type species of *Perilampus* by Ashmead (1904:266).

This new information was made available to Argaman prior to his publications and he discussed the implications of this typification for his generic classification, albeit with the mistaken notion that the ICZN will need to validate *Cynips italica* Fabricius as the type species of *Perilampus* (Argaman 1990:254). It should also be noted that his designations of type species for *Cinipsillum* and *Cynipsillum* are unnecessary and without merit; Agassiz was correcting Lamarck's name and therefore the typification of Gahan and Fagan should

apply to *Cinipsillum*. This typification has been accepted since first published in 1923 and should not be changed.

*Perilampus* sensu Argaman is a heterogeneous assemblage comprised of species that Argaman did not see or did not care to deal with. He treated only twelve species in his key, but refers 45 species to *Perilampus* in his checklist. It is clear that species remained in *Perilampus* if they could not be referred to other genera; *Perilampus* sensu Argaman contains even less information than *Perilampus* (*auctorum*), which is itself demonstrably paraphyletic (Darling 1983). As a result of the synonymies proposed herein, all species of Perilampinae will return to *Perilampus* unless classified in *Euperilampus* Say, *Monacon* Waterston, *Krombeinius* Bouček, *Burksilampus* Bouček, or *Steffanolampus* Bouček; a key to the genera is provided in Bouček (1978).

#### DISCUSSION

The net result of the synonymies proposed herein is a return to the status quo. It should be noted that all of the synonymies are subjective; hence, considerable detail has been provided to point out the problems inherent in each of Argaman's generic concepts and the shortcomings of the reclassification as a comprehensive system for the species traditionally referred to *Perilampus*. It is not my intention, nor would it be possible, to suppress Argaman's work. Most of his generic names will remain as available names and some would undoubtedly become valid names if *Perilampus* were subdivided at some later date. The problematic cases from the standpoint of nomenclature are the genera with type species based on misidentified specimens. A number of these cases have been documented and additional cases can only be confirmed by studying Argaman's collection and by assembling all the material that formed the basis for his treatment of particular type species. If nomenclatural instability arises for particular genera, submissions will need to be pre-

pared asking the Commission to typify these genera, ideally resulting in objective synonymy with *Perilampus*. The nomenclature of the Perilampidae needs to be stabilized, but does not necessarily need to involve the Commission, which is a time-consuming process. My purpose in providing a rather lengthy discussion of the inadvisability of incorporating the Argaman genera into the nomenclature is to obviate formal action by the Commission.

In the context of evaluating the genera proposed by Argaman, I have tried to indicate some morphological characters that may define monophyletic species groups of *Perilampus*. All of these character systems (e.g., size and shape of T1, shape of prepectus, setae on T2, sculpture on T3), need much more detailed analysis, both in terms of homology and level of generality. Comprehensive phylogenetic studies may eventually support a revised generic classification, but for the present, a system of informal species groups, some of which have been discussed above, will serve both as mnemonic devices and as more inclusive names. Following the suggestion of Smulyan (1936), species group names could be based on the first described species, but other systems are certainly possible. The beauty of such a system is its flexibility and independence from the strictures of zoological nomenclature; and errors, oversights, omissions, and idiosyncracies can be dealt with expediently. Species groups are a lexicon for communication rather than a vehicle for self-aggrandizement.

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## APPENDIX 1

Alphabetical index to the primary treatments of the genera recognized by Argaman (1990, 1991).

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